Aberdeen Contaminated Groundwater Superfund Site

Aberdeen, Moore County, North Carolina

EPA, Region 4

Spill ID: A4QH

March 2012

Priority Panel

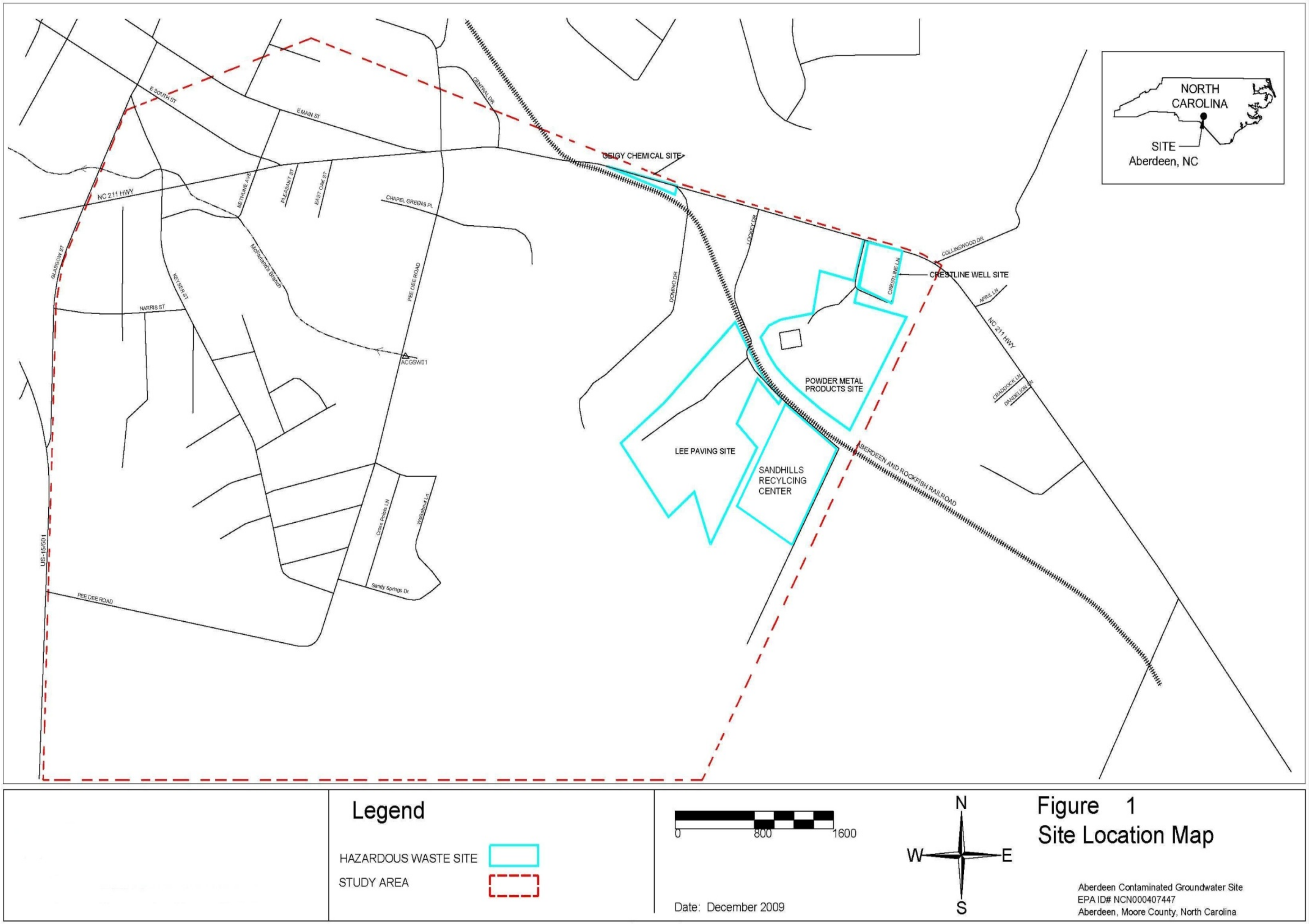
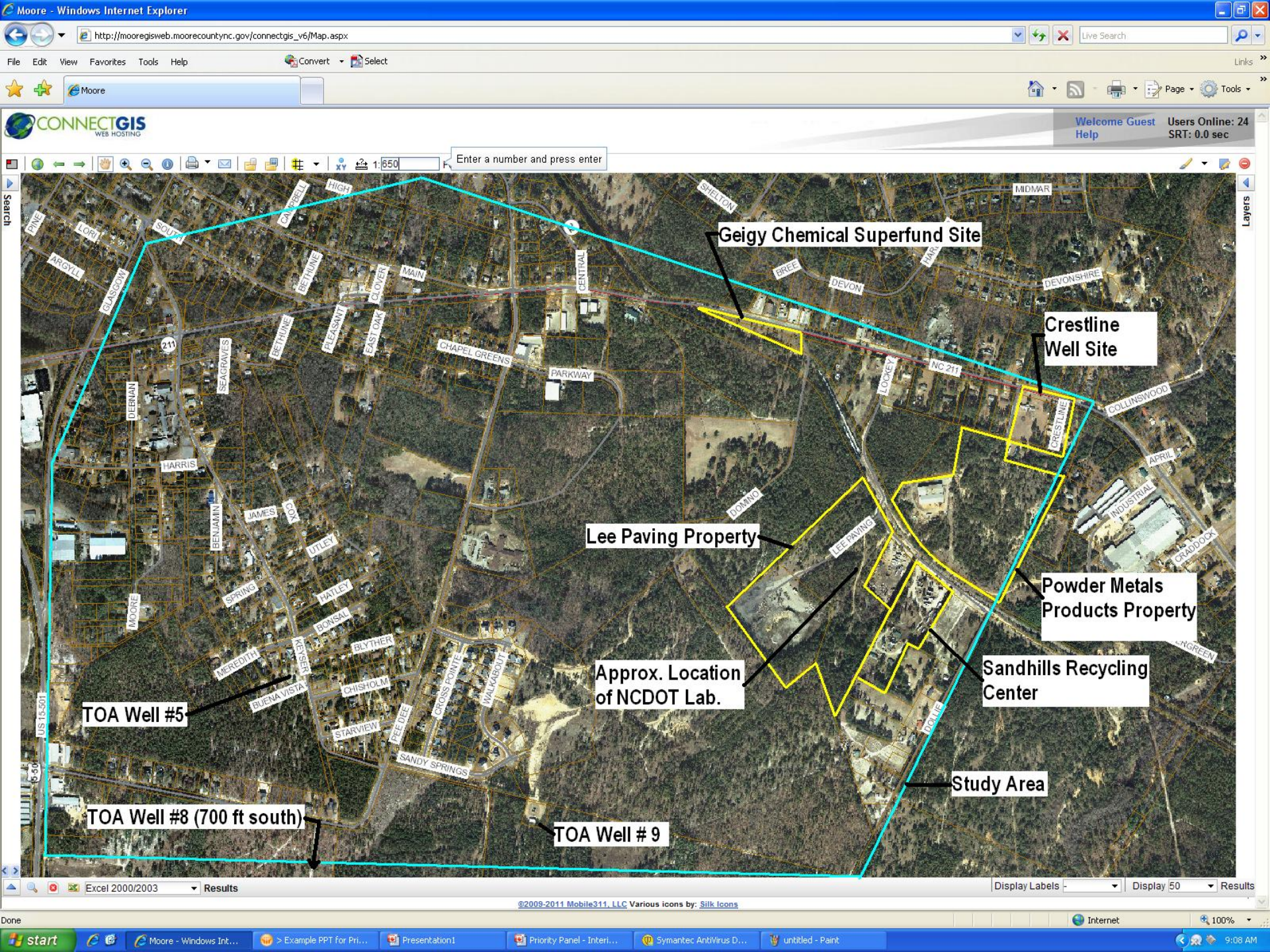


Figure 1
Site Location Map

Aberdeen Contaminated Groundwater Site
EPA ID# NCN000407447
Aberdeen, Moore County, North Carolina


Moore - Windows Internet Explorer
http://mooregisweb.moorecountync.gov/connectgis_v6/Map.aspx
CONNECTGIS WEB HOSTING
Welcome Guest
Help
Users Online: 24
SRT: 0.0 sec
Enter a number and press enter
Search
Layers
Geigy Chemical Superfund Site
Crestline Well Site
Lee Paving Property
Powder Metals Products Property
Approx. Location of NCDOT Lab.
Sandhills Recycling Center
TOA Well #5
TOA Well #8 (700 ft south)
TOA Well # 9
Study Area
Excel 2000/2003
Results
Display Labels
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Results
©2009-2011 Mobile311, LLC Various icons by: Silk Icons
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Internet
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ACGw Site Background

- 1964-1989 – NCDOT operated aggregate testing laboratory on Lee Paving property
  - 1994-1996 – NCDOT conducted comprehensive site assessment
- 1990 – Detected Trichloroethene (TCE) at Geigy Site
- 1990 – EPA emergency response at Rte 211 Contaminated Well Site/Crestline Contaminated Well Site (connected 40 residences/businesses to municipal hooked up due to lead/TCE in groundwater)

ACGw Site Background

Powder Metal Products (PMP) property

- 1980-1995 PMP made precision machine parts, process reportedly included solvent dip bath
- 1995 PMP sold property to Diamond Exhaust & Equipment – operated facility as wholesale automotive exhaust parts distribution center
- 2010 CALCO Enterprises purchased property – provide mechanical services (piping, steel, welding, etc.)

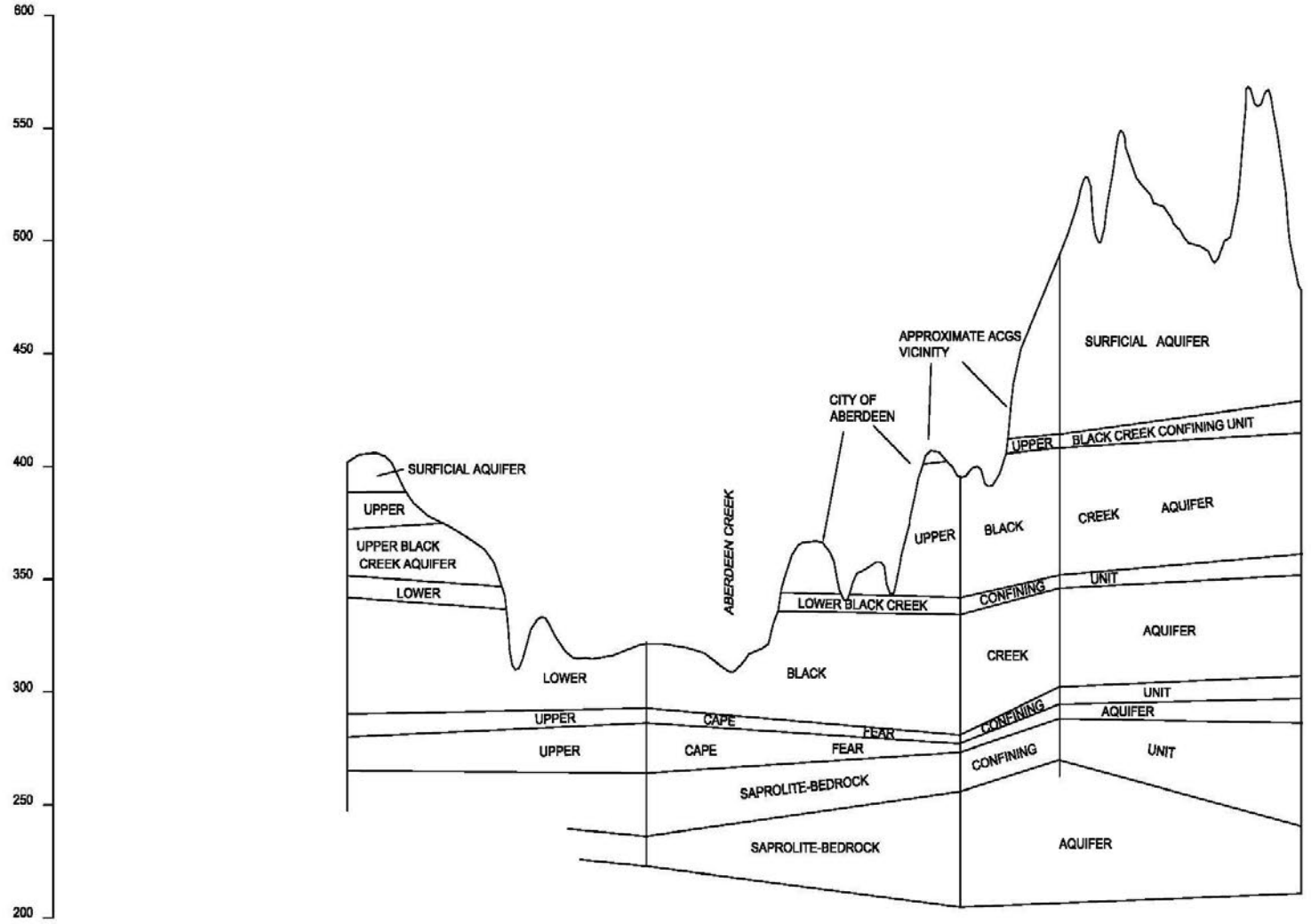
ACGw Site Background

- Site placed on National Priorities List in Sept 2008
- Described Site as a ground water plume with no identified source
- EPA/NCDENR felt PMP property was the most likely source for TCE

ACGw Site Geology

Hydrogeologic framework

- Five distinct hydrogeologic units from top (the surface) to bottom
  - Surficial aquifer
  - Upper Black Creek aquifer (Upper BCA)
  - Lower Black Creek aquifer (Lower BCA)
  - Upper Cape Fear aquifer
  - Saprolite-bedrock aquifer
- Each aquifer is separated from the overlying aquifer by a confining unit which informally named for the aquifer it overlies
- Confining units are not continuous



Note

Vertical Relief is Exaggerated

0 1 Mile 2 Miles

Drawing Source: Adapted from Coble and Elmers (1993)
Date: December 2009

Figure 2

Generalized Cross Section of the Aberdeen, NC Area

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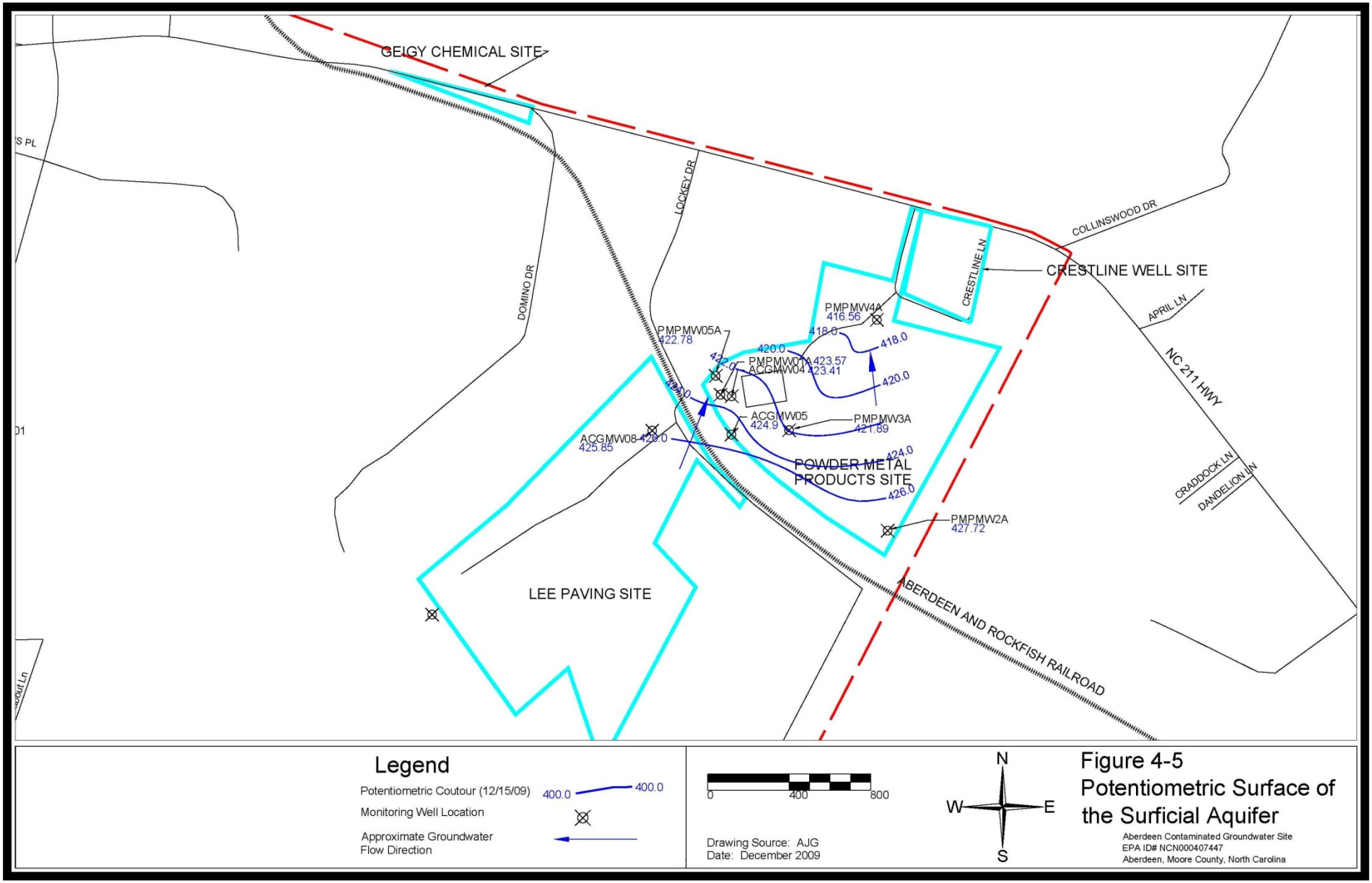

Figure 4-5
Potentiometric Surface of the Surficial Aquifer

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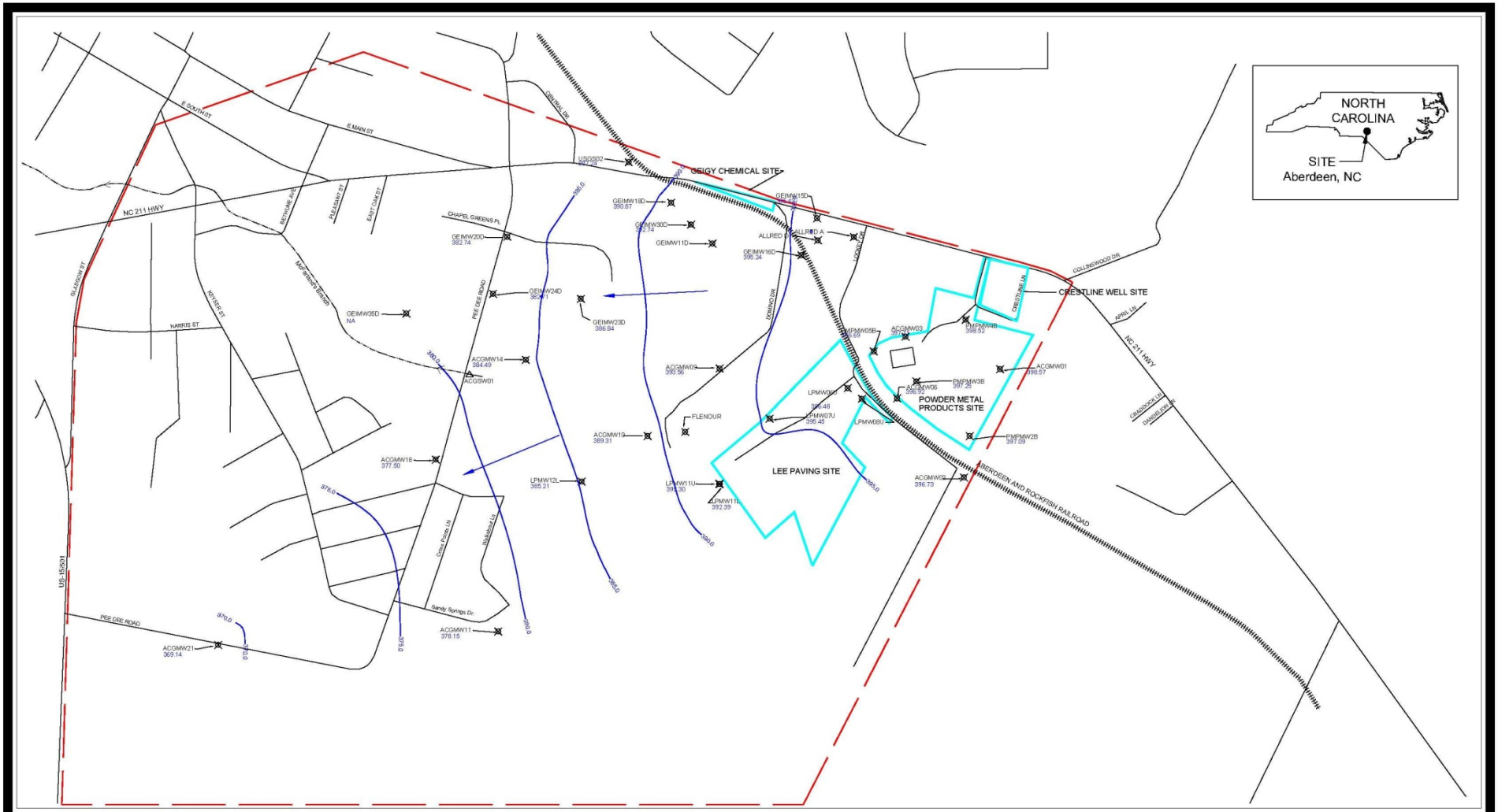

Legend

Potentiometric Coutour (12/15/09) 400.0 — 400.0

Monitoring Well Location

Approximate Groundwater Flow Direction

0 800 1600

Drawing Source: AJG
Date: December 2009

N
W E
S

Figure 4-6
Potentiometric Surface of the Upper Black Creek Aquifer

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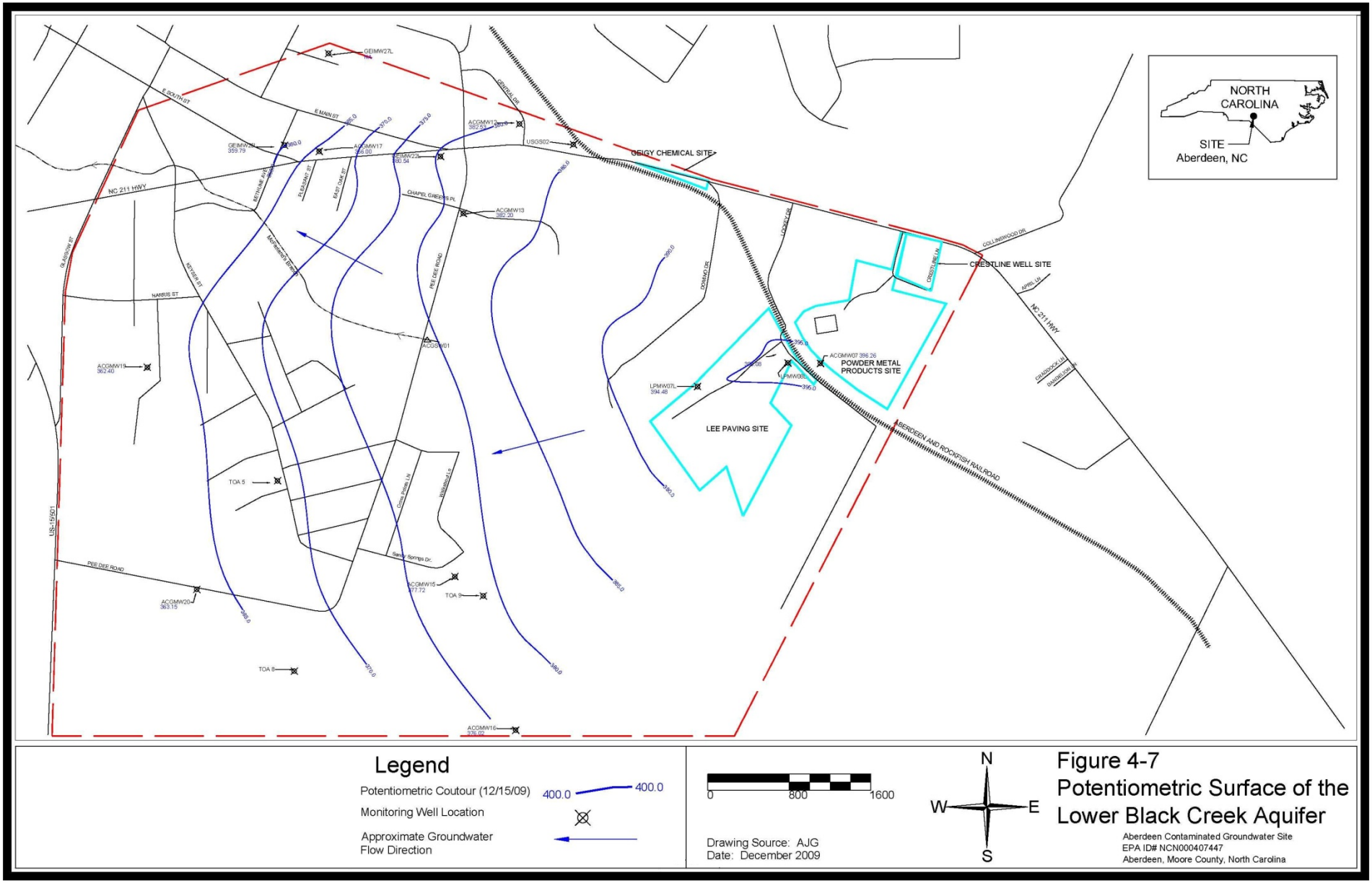

Figure 4-7
Potentiometric Surface of the Lower Black Creek Aquifer

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Remedial Investigation Findings

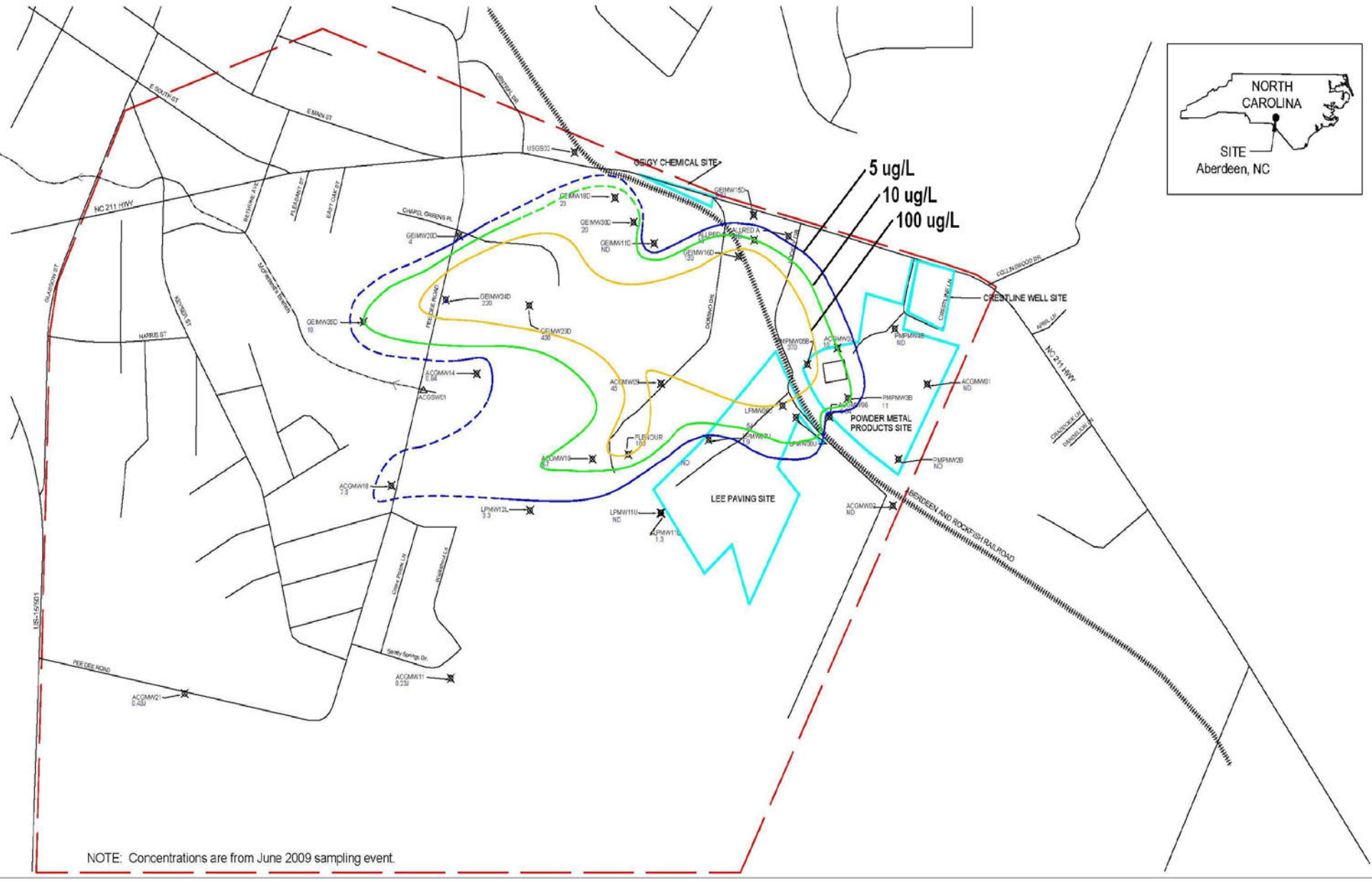
Findings for Soil

- Analytical data for soil and groundwater samples from PMP property does not confirm PMP property as the source of TCE
  1) If a spill occurred, it happened long ago
  2) Data does not identify any other possible source
  3) Over 3 years of groundwater data does not support the idea of a continuing source of TCE (stable plume)
- No surface water/sediment concerns

Remedial Investigation Findings

Findings for Groundwater

- Surficial aquifer – 8 monitoring wells
  - No contaminants that exceed applicable groundwater standards
- Upper Black Creek Aquifer - 32 monitoring wells
  - TCE detected in 27 of the 32 wells
  - Mean concentration of TCE - 63 µg/l, maximum concentration of TCE - 430 µg/l
  - Federal MCL for TCE → 5 µg/l, NC 2L standard for TCE → 3 µg/l
  - Pesticides detected 16 of the 32 wells
- Lower Black Creek Aquifer – 15 monitoring wells
  - TCE detected in 8 of 15 wells
  - Maximum concentration of TCE - 62 µg/l
  - Pesticides detected in 6 of the 15 wells
- TCE plume and pesticide plume from Geigy Superfund Site are comingled
- Sporadic detection of elevated metals attributed to natural conditions and anthropogenic sources



Legend

Isc-Concentration Coutour (TCE) [Dashed Where Inferred]

100 ug/L

10 ug/L

5 ug/L

0 800 1600

N W E S

Figure 4
TCE Concentration Upper Black Creek Aquifer

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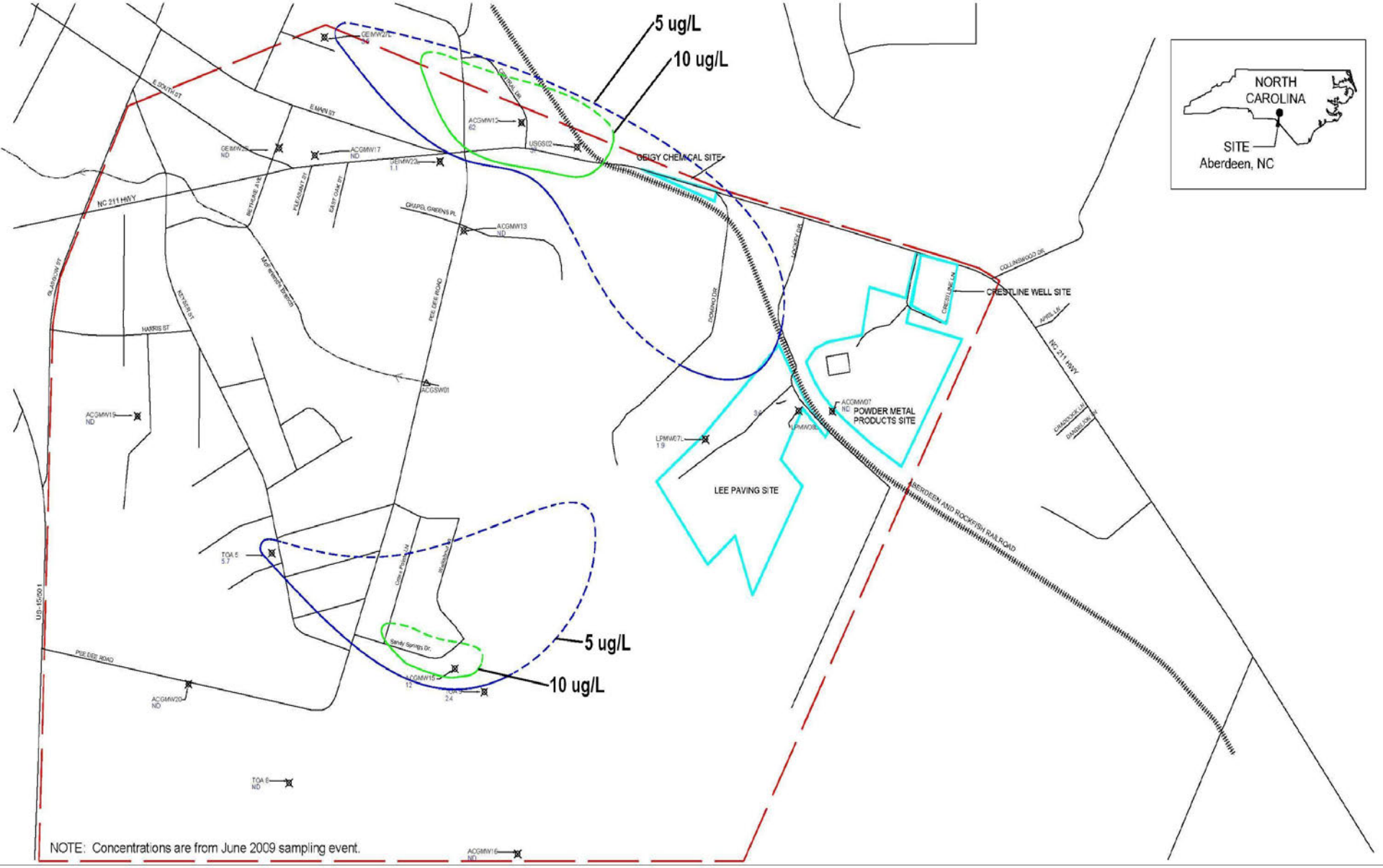

Legend

Isc-Concentration Coutour (TCE) [Dashed Where Inferred]

10 ug/L
5 ug/L

0 800 1600

N
W E
S

Figure 5
TCE Concentration Lower Black Creek Aquifer

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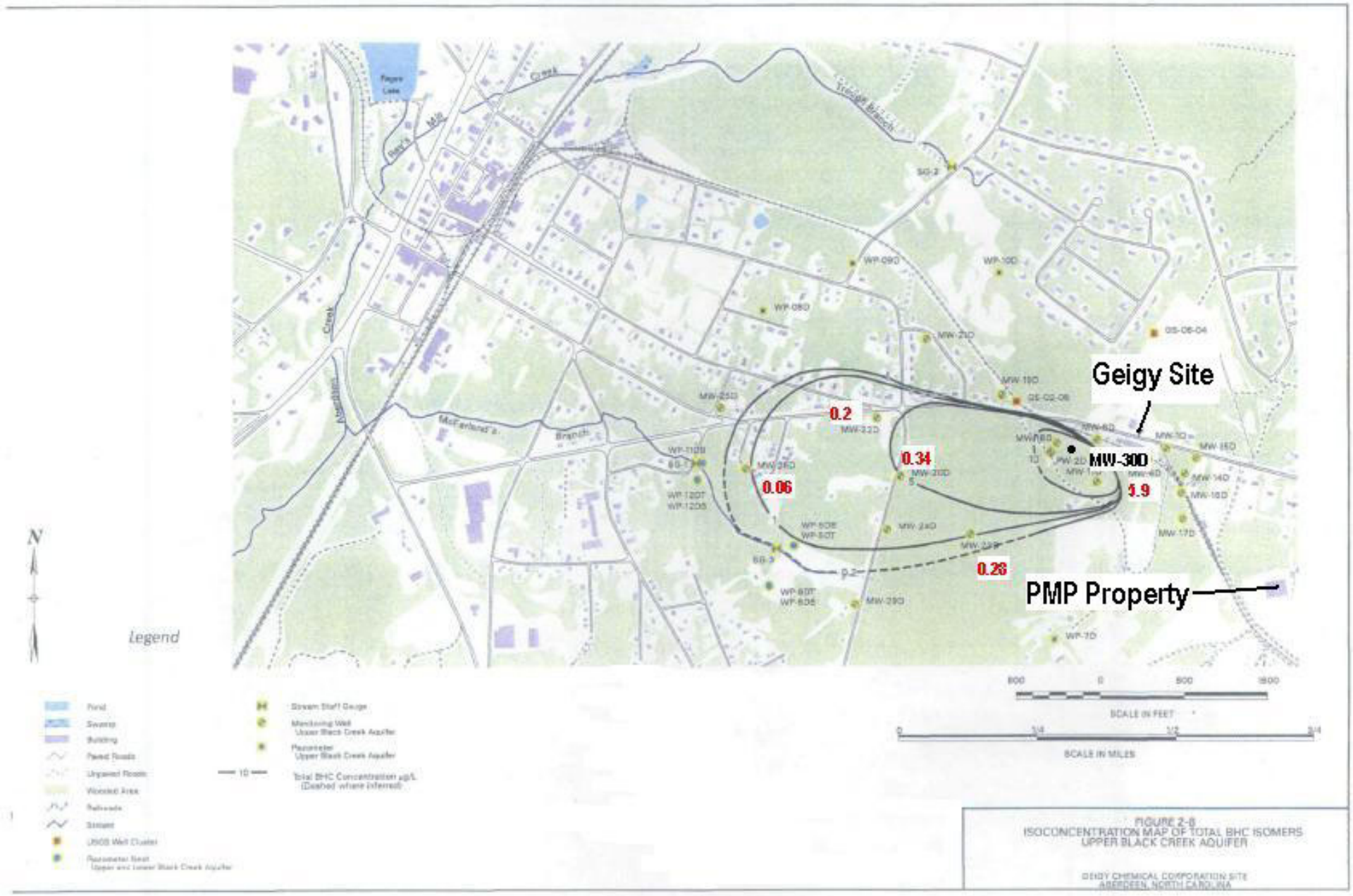


FIGURE 2-8
ISOCONCENTRATION MAP OF TOTAL BHC ISOMERS
UPPER BLACK CREEK AQUIFER

GEIGY CHEMICAL CORPORATION SITE
ABERDEEN, NORTH CAROLINA

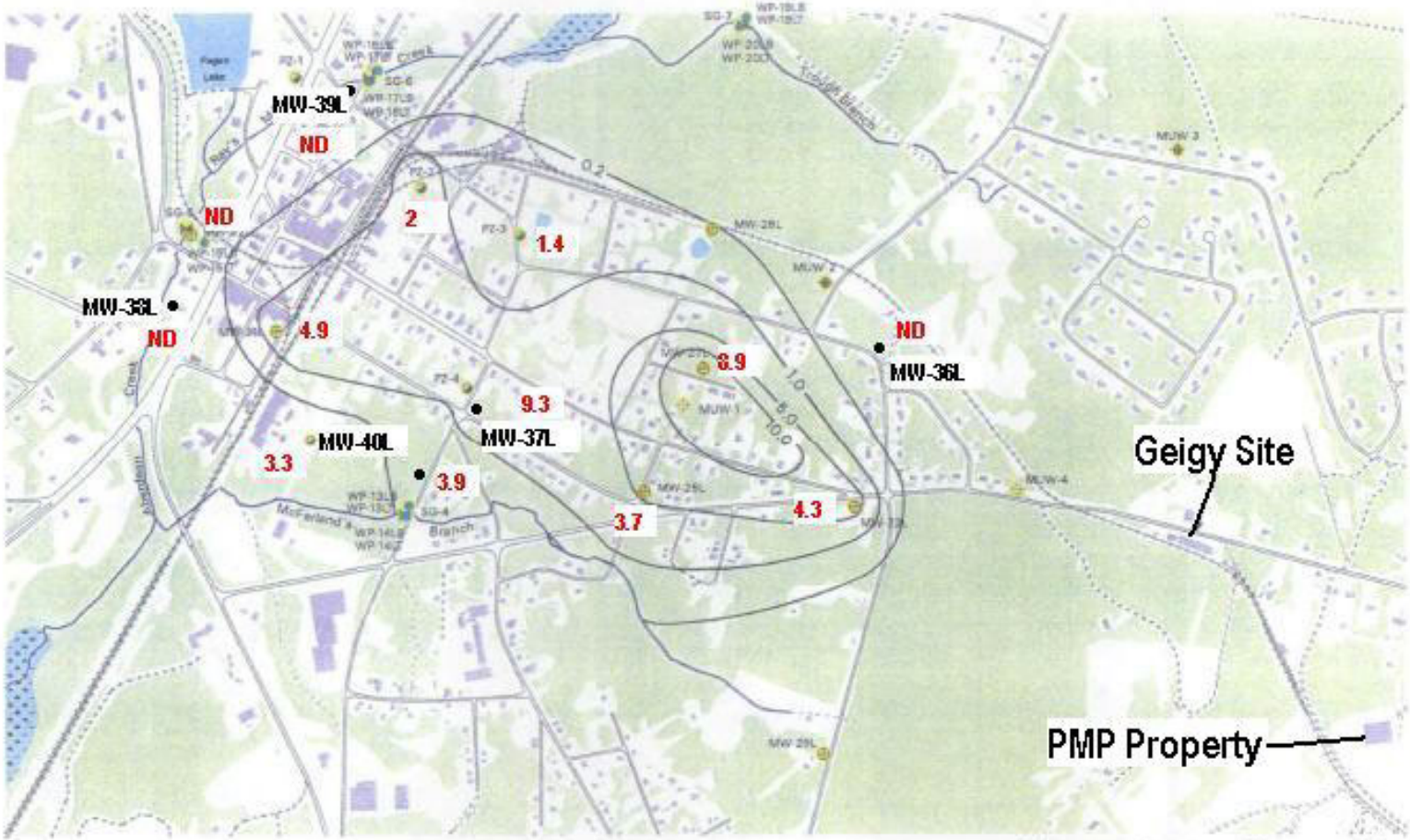


FIGURE 2-10
ISOCONCENTRATION MAP OF TOTAL BHC ISOMERS
LOWER BLACK CREEK AQUIFER

GEIGY CHEMICAL CORPORATION SITE
ABERDEEN, NORTH CAROLINA

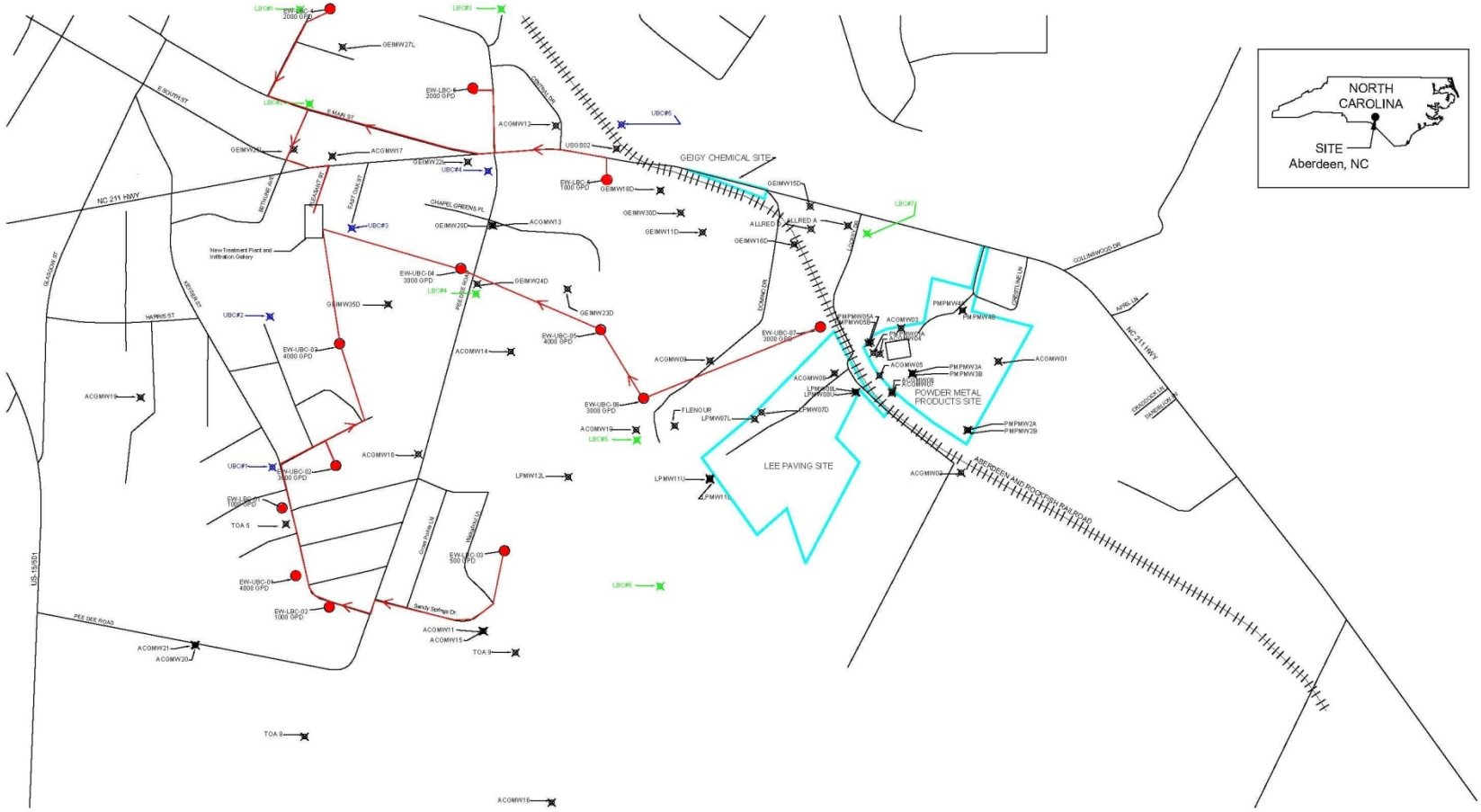
Selection of Interim Action

- Groundwater
  - Install 13 extraction wells (7 in the Upper Black Creek aquifer and 6 in the Lower Black Creek aquifer)
  - Install distribution piping, power connections, and controls
  - Construct groundwater treatment plant (activated carbon due to presence of TCE and pesticides in Gw)
  - Construct infiltration gallery for discharge of treated groundwater
  - Provide wellhead treatment at two Aberdeen municipal supply wells (TOA #5 and TOA #9)
  - Install additional monitoring wells to complete the delineation of plumes
  - Continue to monitor groundwater
  - Conduct Five Year Reviews

Selection of Interim Action

- Soil
  - No action necessary
- No ecological risks were identified

- Selected Interim Action due to data gap in the Lower Black Creek Aquifer
- Anticipate issuing Final ROD within 5 years



Legend

- EXTRACTION WELL LOCATION
- PIPING FOR DISTRIBUTION SYSTEM
- EXISTING WELL LOCATION
- PROPOSED UBC MONITORING WELL
- PROPOSED LBC MONITORING WELL

0 800 1600

N W E S

Figure 6

Alternative 3 New Groundwater Treatment Plant, Discharge to Infiltration Gallery

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Selection of Interim Action

- Estimated Capital Cost: $3,176,400
- Estimated Annual O&M Cost: $248,300
- Estimated Total O&M Cost Over 30 Years: $7,449,700
- Estimated Present Worth Cost (30 year timeframe): $7,260,200
- Estimated Construction Timeframe: 12 months